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Optical reflectance of silicon implanted by silver ions

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Abstract

© 2017, National Institute of Optoelectronics. All rights reserved. The new results on the optical reflection of the Si surface layers implanted by silver ions at low energies of 30 keV over a wide dose range from 5.0 × 10 14 to 1.5 × 10 17 ion/cm 2 are presented. As the ion dose of irradiation was increased, a monotonic decrease in the reflection intensity in the ultraviolet region of the spectrum was observed, due to amorphization and macrostructuring of the Si surface. On the other hand, in the long-wavelength region, a selective reflection band appears with a maximum near 830 nm due to plasmon resonance of Ag nanoparticles s ynthesized during implantation.

Keywords

Implanted silicon, Ion implantation, Reflectance, Silver nanoparticles

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